

**Comment (Case 3676) – On the proposed conservation of *Tupinambus indicus* Daudin, 1802 by replacement of the neotype**

(see BZN 72(2): 134–141 [Case]; 73(1): 55–58; 73(2–4): 119–120)

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I would like to comment on the proposal to replace the neotype of *Varanus indicus* by Weijola (2015) and the response by Böhme et al. (2016).

1. The only evidence available about the identity of *Varanus indicus* is the type location, a brief description and an illustration of the type specimen.

2. The type location provides the strongest evidence of the identity of *V. indicus*. Daudin (1802) identifies the person responsible for the discovery of the animal in Ambon. Weijola (2015) suggests that the lost type specimen might not have been the one collected by Riche. Even if this is the case, we can only assume that Daudin procured another specimen that he believed also came from Ambon.

3. Böhme et al. (2016) argue that the illustration of *Tupinambis indicus* (Daudin, 1802, pl. XXX by Adel Daudin) is an “iconotype”. This is not a term recognised in the ICZN Code and an illustration cannot substitute for a lost type specimen. They further argue that the illustration proves that Daudin’s description cannot be of *Varanus cerambonensis* because it lacks a light temporal/post ocular stripe. In fact the illustration lacks any head pattern at all and is atypical of any known species in the *Varanus indicus* group. Similarly, Adel Daudin’s depiction of *Tupinambis stellatus* (Daudin, 1802, pl. XXXI) lacks detail of pattern on the head and tail, atypical of animals of the *Varanus niloticus* group. The other *Tupinambis* illustration (*T. albigularis*, see Daudin, 1802: pl XXXII) is by De Seve and is the only one of the three that attempts to faithfully render the pattern of the entire animal. The lack of head patterning in Daudin (1802, pl. XXX and XXXI) are particularly striking in the colour illustrations that were produced as a luxury edition of Daudin’s work (Bour, 2011). It seems likely that Adel Daudin included only aspects of the pattern that were included in her husband’s diagnosis of *T. indicus*: “*suprà niger , punctis albidis sparsis ; caudâ compressa , non carinato-serratâ*”.

4. Daudin’s (1802) description and the accompanying illustration indicate that the dorsum has white spots not arranged in bands. Böhme et al. (2016) state that the arrangement of dorsal spots in rows is an important diagnostic characteristic, and that because the spots are not in bands the type specimen could not have been the species known from Ambon. In their description of *V. cerambonensis*, Philipp et al. (1999) state that, in adults, there is “a marked tendency to a cross-banded dorsal pattern”, which is not the same as “every specimen of *V. cerambonensis* has bands on its back”. In both the holotype (ZFMK (MZB) 7061, Philipp et al., 1999, fig. 10) and the paratype (ZFMK (MZB) 7619, Philipp et al., 1999, fig. 3) of *V. cerambonensis* the banding pattern is weak (Philipp et al., 1999). Weijola & Sweet (2015) document specimens of *V. cerambonensis* from various islands in the central Moluccas which show great variations in pattern, with some having virtually no arrangement of banding in dorsal markings (Weijola & Sweet, 2015, p. 14, photograph, fig. 1). They also make reference to an “almost entirely melanistic” specimen

from Buru (ZMA 15416g). The dorsal pattern cannot be regarded as definitive proof that Daudin's animal was a different species to *V. cerambonensis*.

5. The premise that two species of monitor lizards occurred on the island stems exclusively from the assumption that all four untagged lizards in the jar ZMA1146 marked "Ambon" were collected on Ambon (Philipp et al., 1999). If any of the authors had visited Ambon and found only the single species reliably reported from that island, the argument that Daudin's (1802) description was of a species from elsewhere is unlikely to have emerged. Rather, the authors would have recognised (as does Weijola, 2015) that the monitor lizard on Ambon (and other islands in central Moluccas) was described by Daudin in 1802 and that another name was required for the wide ranging lizard occupying New Guinea and Australia. Instead, Böhme et al. (2016) suggest that one of two sympatric monitor lizards on Ambon might have gone locally extinct since the end of the 18<sup>th</sup> century, or that subsequent visitors have failed to find the second species despite its presence. Neither argument is convincing because no examples of historical extinctions of *Varanus* lizards from islands over 200 km<sup>2</sup> are known and the fact that only one species has been recorded from all major habitats on the islands makes the hypothesized presence of another generalist species untenable.

6. Böhme et al. (2016) suggest that the proposed changes would cause confusion, not only amongst taxonomists but also "ecologists, conservationists as well as national and international custom and conservation authorities", particularly because members of the *V. indicus* group suffer from high levels of exploitation. They also cite checklists authored by themselves to demonstrate how much the authorities rely on the current nomenclature. However CITES (comparative tabulations using all trade terms) records less than 8000 items of *V. indicus* and two items of *V. cerambonensis* traded internationally between 2000 and 2015, compared with over 8 and 15 million items of *V. niloticus* and *V. salvator*, respectively, within the same time period (CITES trade statistics derived from the CITES Trade Database, UNEP World Conservation Monitoring Centre, Cambridge, UK). Major changes in the taxonomy of *V. salvator* (e.g., Koch et al., 2007; Koch et al., 2010; Welton et al., 214) and necessary changes in the taxonomy of *V. niloticus* (e.g., Dowell et al., 2015) will inevitably result in considerable confusion, but the amount of confusion caused by correcting *V. cerambonensis* to *V. indicus* and the recognition of *V. chlorostigma* for the animals east of central Moluccas will be negligible, and an insufficient reason to accord universality priority over other aspects of the Code.

7. Böhme et al. (2016) further suggest that the proposed changes would undermine taxonomic stability. But their solution, to change the type locality of the existing neotype from Ambon to "northwestern New Guinea", is not a correction or a clarification in the sense of Recommendation 76A of the Code, but a rather vague guess about where their specimen might have come from, contrary to the information supplied in Daudin's (1802) description (Ambon) and contrary to the data accompanying their specimen (Ambon). The cornerstone of taxonomic stability is the existence of type material with accurate locality data, which is not provided by the current neotype.

8. This mistake arose out of a lack of primary evidence about species richness at the type locality of *V. indicus* (Ambon) and the assumption that the contents of a jar with missing provenance was sufficient proof of the occurrence of two species on Ambon, rendering further investigations unnecessary. In this case the solution proposed by Weijola (2015) is the preferable alternative because it would provide type specimens for both

species (*V. indicus* and *V. chlorostigma*) with documented provenance and hence reliable type localities, retain the original (and reliable) type localities for both species and allow future work on the taxonomy of the group to be conducted on a solid basis and without any of the current inconsistencies.

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